

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference NANY/20500250/JW/mf		FOR FURTHER ACTION		See Form PCT/PEA/416	
International application No. PCT/SG2005/000043		International filing date (day/month/year) 17 February 2005		Priority date (day/month/year) 17 February 2004	
International Patent Classification (IPC) or national classification and IPC Int. Cl. H01L 27/16 (2006.01) G01J 3/46 (2006.01)					
Applicant NANYANG TECHNOLOGICAL UNIVERSITY et al					

This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 7 sheets, as follows:

- ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
- ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 7 December 2005	Date of completion of this report 09 January 2006
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1. With regard to the language, this report is based on:

☒ The international application in the language in which it was filed☐ A translation of the international application into

, which is the language of a

translation furnished for the purposes of:

☐ international search (under Rules 12.3(a) and 23.1 (b))☐ publication of the international application (under Rule 12.4(a))☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

☐ the international application as originally filed/furnished☒ the description:

pages 1-30 as originally filed/furnished

pages* received by this Authority on with the letter of

☒ the claims:

pages* as originally filed/furnished

pages* 31-37 received by this Authority on 14 December 2005 with the letter of

pages* received by this Authority on with the letter of

☒ the drawings:

pages 1/20-20/20 as originally filed/furnished

pages* received by this Authority on with the letter of

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3.

The amendments have resulted in the cancellation of:

☐ the description, pages☐ the claims, Nos.☐ the drawings, sheets/figs☐ the sequence listing (specify):☐ any table(s) related to the sequence listing (specify):

4.

This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages☐ the claims, Nos.☐ the drawings, sheets/figs☐ the sequence listing (specify):☐ any table(s) related to the sequence listing (specify):

* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement		2. Citations and explanations (Rule 70.7)	
Novelty (N)	Claims 1-41	Claims 1-41	Industrial applicability (IA)
	Claims 1-41	Claims 1-41	Inventive step (IS)
YES	NO	YES	NO
	YES	NO	YES
NO	YES	NO	YES
	NO	YES	NO

EP 1 006 585 discloses a three colour detection pixel sensor comprising a top doped p⁺ layer contacted by an N-well beneath, and P-substrate beneath that in turn. Electrical gate contacts on the top surface contact both sides of the p⁺ region and the N-well and P-substrate in turn to allow current to flow when each layer detects a certain colour wavelength.

US 5 965 875 discloses a three colour sensor with three stacked n-p-n levels with a possible fourth doped p region below again. Electrical contacts are placed in contact with the regions to determine current flowing due to impinging light.

SU 1689768 discloses a three pn junction colorimetric sensor one above another which use photocurrents induced by a particular wavelength in each level.

JP 07-038136 discloses a photodetective element composed of pn junctions different to each other in wavelength selectively to induce a current proportional to the light detected.

None of the cited art discloses two junctions with a connecting material between the junctions. Therefore claims 1-41 can be said to be novel and to have an inventive step.

The claims are directed to manufacturing and therefore can be said to industrially applicable.